



# Langley Research Center SmallSat Overview

William “Chris” Edwards  
Associate Director for Science, Engineering Directorate  
Langley Research Center  
[william.c.edwards@nasa.gov](mailto:william.c.edwards@nasa.gov)

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# NASA Langley

## Description and Capabilities related to Small Spacecraft

***LaRC has a complete concept to flight instrument capability.***

Mission architecture analysis, engineering design and analysis, systems engineering, integration and test, calibration, composite and metal machine shop with 3D printing capability, and a Mission Operations Center. Brand new 175,000ft<sup>2</sup> world-class sensor & instrument Research and Development laboratory with integrated cleanroom facilities.

### **Specific Focus Areas:**

- Entry, Decent, and Landing (EDL)
- LiDAR instruments to study winds, CO<sub>2</sub>, clouds, aerosols, and other key atmospheric processes
- Atmospheric composition, radiation budget and In-flight calibration of science instruments
- In-Space autonomous assembly and manufacturing



# Current Small Spacecraft Activities

## **Advanced Composite Solar Sail System Project (ACS3) - Launch 2022**

- LEO flight demonstration of an 80m<sup>2</sup> composite boom solar sail propulsion system

## **GPX2 - Launch Dec 2021**

- Demonstrates differential GPS system testing for use for on-orbit close proximity ops. Secondary mission is GPS occultation with Aerospace Corp. Flight test of additive manufactured spacecraft frame.

## **The Stratospheric Aerosol and Gas Experiment (SAGE IV) Pathfinder**

- SAGE IV is a multispectral (UV-VIS-NIR), solar occultation imager

## **Calibration of Lunar Spectral Reflectance from Space (ARCSTONE)**

- Provides Lunar Spectral Irradiance Absolute Calibration for use by other instruments.

## **ATHENA**

- Fast and low-cost instrument that utilizes the NovaWurks Hyper Integrated Satellite (HISat), reducing constraints on instrument design. Demonstration will validate precision operations of a single CERES sensor payload. Demonstrates collaborative partnerships.

### **LaRC Small Spacecraft Points of Contact**

William "Chris" Edwards  
Engineering Directorate, NASA Langley  
[william.c.edwards@nasa.gov](mailto:william.c.edwards@nasa.gov)  
Phone: 757-864-1555

Carrie Rhoades  
Office of Strategic Analysis,  
Communications, & Business  
Development  
[carrie.m.rhoades@nasa.gov](mailto:carrie.m.rhoades@nasa.gov)  
Phone: 757-864-8793

